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ABSTRACT

Based on the assumption that the variables used in diffusion of information studies in developing nations are subject to Western bias, theoretically complex, difficult to compare across cultures, and difficult to operationalize, a study was undertaken to test the predictive ability of simpler demographic variables. The data were drawn from a nationwide sample of 4,863 Ghanians and were collected by information agency interviewers of that country using a quota scheme to approximate census figures. Analysis of results showed that, using a modification of the D. Lerner and E. Rogers and L. Svenning model, variables from the biosphere (age and sex), the culture (education and occupation), the environment (road class and town size), and the use of mass media explained as much or more of the variance in political knowledge of the respondents as did studies using psychological variables such as empathy, cosmopoliteness, socioeconomic status, or achievement motivation. The findings suggest the use of a causal process model and the simpler demographic variables for market analysis and testing campaign effectiveness when a full-scale sociometric analysis is not feasible, especially in developing nations where little is yet known about the dynamics of the interview situation or about cross-cultural comparability of data. (Author/FL)

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Concomitants of Political Knowledge: Demographic versus Psychological Predictors

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by

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Many studies of information diffusion in developing nations deal with "peasants" as a subculture which is "clearly distinguishable as a unique category of individuals" (Rogers & Svenning, 1969:19). This category is most often defined by the level of economic activity (e.g., Firth, 1956:87) or by adherence to "traditional" value patterns (e.g., Belshaw, 1956:54).

Proponents of this approach argue persuasively for the importance of communicating with "peasants" by ascribing three-fourths of the population of developing nations to this subculture (Rogers & Svenning, 1969: 29) and some researchers have attempted to apply this paradigm to "modern" or "western" societies as well (e.g.,Harding, 1972; Stephens, 1972).

This kind of approach has led to a series of distinguishing criteria variables which are (1) biased toward a "western" world-view, (2) theoretically complex, (3) difficult to operationalize, and (4) difficult to compare across cultures.

Cultures are rarely either/or phenomena, but are more productively viewed as a series of distributive clusterings along social continua (Steward, 1971; Condon & Yousef, 1975). Even those who use the "subculture of peasantry" paradigm agree that peasants do not exist in isolation, and that their inextricable involvement with urban cultures is steadily increasing as the communications infrastructure of developing nations improve (e.g.,Foster, 1962:46).

Using the continua approach, we have attempted to build a theoretical framework for information diffusion which is less complex than those used in previous studies, using variables that are more easily operationalized, while retaining at least equal correlational predictability.

Our approach has a strong practical component, in that the variables we use are currently a part of many national censuses and are easily measurable in countries where censuses do not exist. This yields a considerable reduction in the cost data collection and evaluation for national information planning agencies.

"Western Bias"

The criteria which have been used to differentiate "peasant" or "traditional" subcultures have generally been evaluated from the "western" or "modern" end of the social continua, from which most researchers operate. Not only does the lack of knowledge about, and understanding of, peasant subcultures result in their being negatively evaluated (Frey, 1966:108), but the same fears and political utilities which operate to produce tribalism or racism may feed the development specialists' need to conceptualize the peasant as "backward." This can lead to methodologies which are questionable at best and self-serving at worst.

Lerner's landmark study in information diffusion used the concept of empathy (Lerner, 1964:68-9), which is usually defined as the ability to place one's self in the position of others (Allport, 1954:3-56). Two of Lerners items deal with "people in the same circumstances as yourself" and thus seem to deal with intra-personal concerns rather than empathy, which is clearly inter-personal. Two items deal with the amount of information available to the respondent (Which other country would you like to live in? What do you miss by not reading the newspaper?) which is, again, an intra-personal variable. Two other items seem to allow only the most subjective of evaluation of potential responses (How do people who go to movies differ from those who do not? What two questions would you like to ask about this /other/ country?).

The remaining three items in Lerner's empathy scale deal with counter-factual role imagination (What would you do if you were the editor of the newspaper?) and it is this type of question which has been adopted by most subsequent researchers to measure empathy (e.g.,Eister, 1962; Frey, 1964; Rogers & Svenning, 1969). It is important to note that the counter-factual roles required are all sharply upward-mobile, and that the ability to empathize in this way is low not only in "backward" subcultures of peasants, but also in the highly sophisticated subcultures of American urban ghettoes (Golding, 1974). Thus empathy, as it has been used in diffusion studies in developing nations, may be more a measure of the perceived utility of speculation about unattainable goals.

Theoretical Complexity

The concept of "cosmopoliteness" also has some strong evaluative components which can be used by development agents to reinforce their feelings of superiority over "localities" and "peasants." The cosmopolite has been conceptualized as having keener intelligence, more rational viewpoints, and generally being a "more civilized human being" (Park, 1936).

But the theoretical complexity of cosmopoliteness is an even more severed drawback than its western bias. It is such a slippery concept that its definitions are often circular. For example, one definition (Rogers & Svenning, 1969:149-153) begins with an occupational role (say that of "trader") which makes possible contact with outsiders, trips to urban centers and mass media exposure; which can create awareness of new roles and the value of education; which can motivate higher aspirations and educational achievement; which leads to cosmopoliteness; which is

defined by contacts with outsiders, the number of trips to urban centers and exposure to mass media; which is, of course, where the process was at step two.

With such complex variables, it is difficult to isolate single dimensions which can be operationalized and it is equally difficult to discover which of them are causative (or at least antecedent) and which are effects (or consequents).

Literacy faces similar problems when used as an antecedent variable. While literacy is generally believed to perform some sort of "mental unlocking function" beyond the simple increased access to information that reading allows (Burnett, 1965; Shuman et al., 1967), it is difficult to describe just what it is that literacy does beyond providing access to printed matter and there is little agreement among scholars or international agencies as to what literacy is or how it should be tested (Rogers & Svenning, 1969:72-78).

Operationalization

Complex, multidimensional variables are difficult to define operationally. The definition of empathy as a role-taking function (Coutu, 1951) is a measure of counter-factual hypothesizing, which may be a related but not identical skill (Lane, 1966). Certainly, upward-mobile role-taking is only one component of empathy. Others prefer to conceptualize empathy from inference or sympathy perspectives, which demands a different kind of instrument (Berlo, 1960).

Literacy has been measured by the number of years of formal schooling (US Census, 1960), the ability to read and write a short statement on

everyday life (UNESCO, 1963). Both may contain components of literacy, but the results of the two measures are clearly not comparable. Rogers and Svenning (1969:73-75) list six different research strategies to measure functional literacy, all of which stress different dimensions or components of the variable, and which require very different instruments to assess.

Cosmopoliteness has been measured by both attitudinal and behavioral indicators, including attitude towards organizations (Dobriner, 1958; Davis, 1961), membership in organizations (Merton, 1957; Rogers, 1957), number of trips to urban centers (Goldsen & Ralais, 1957; Fliegel, 1966), contact with foreigners (Lerner, 1958), and the types of communcations channels used by the respondent (Deutschman & Borda, 1962). Again, vastly different dimensions are measured by these operationalizations of, supposedly, a single variable.

The problem of comparing uni-dimensional operationalizations of multi-dimensional variables is compounded when the comparisons are to be made cross-culturally.

Conceptual Equivalence

Any measure which depends upon language, such as attitude scales or open-ended questions, are difficult to compare across cultures. It is near to impossible to translate questionnaire items, role-playing situations or even literacy tests dealing with "everyday life" across a number of languages with any assurance that the same thing is being measured (Kluckhohn & Strodtbeck, 1961:82). This poses grave problems to research in developing nations, many of which have several linguistic groups within their borders.

Non-linguistic measures which use subjective evaluations run into similar difficulties. A common method of measuring "status" uses the estimate of the interviewer (Rogers & Svenning, 1969:160). However, the way a Colombian interviewer estimates "status" may be very different from the way an Indian interviewer does. It is clear that if an Indian, using Indian values, were to rate Colombians, he would have low inter-rater agreement with a Columbian interviewer who was working from Colombian values. There seems equally little to support the contention that Indians rating Indians are likely to be measuring the same thing as Colombians rating Colombians. The "status" being measured will be differently defined and will have different relationships with communications variables in different cultures. Even if the same measure, values and interviewers were used in all cultures, it is likely that the measure will have differential meaning and importance from culture to culture.

Operational Equivalence

Perhaps the soundest approach to cross-cultural comparisons to information diffusion research is the socio-metric inventory which attempts to place each individual respondent withir a communications network. Respondents are asked to whom they would turn for information about a particular topic, and their responses are pooled to form a heirarchy and an inter-connection model (Rogers & Shoemaker, 1971:215-17).

At the small-village level, where the entire statistical universe can be sampled, this kind of information is invaluable for the dispenser of information, but it is clearly far too time consuming and expensive to be even dreamed of for large populations.

The use of mass media have been studied by socio-metric methods, using a statistical sample rather than a saturation sample (Carter & Sepulveda, 1964; Frey 1966). Most of these studies tend to collapse mass media into a single, computed variable (Lerner, 1963; Rogers & Svenning, 1969), based on the argument that, since exposure to one of the mass media is positively correlated with exposure to another, there is a "centripetal effect" which divides cultures into media users and unreachables. There is some evidence that inter-media correlations may be quite low in some circumstances (McLeod, 1967) and that media exposure is not, in fact, uni-dimensional. Thus the "centripetal" argument may obscure real differences between media.

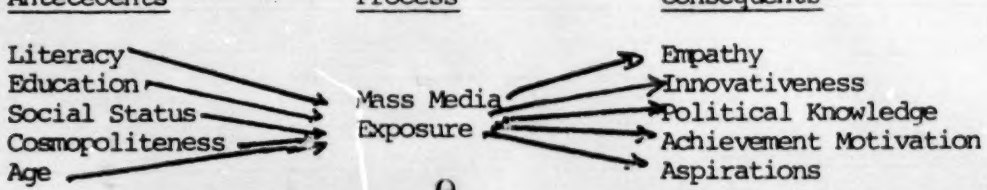
One problem common to all cross-cultural studies, including this one, is the lack of knowledge about differences in the way that the interview situation is preceived by the respondent. It seems likely that interviewer biasing effects (Dowenrend & Colombotus, 1968) and the pressure towards compliant responses (Dowenrend, Willians & Weiss, 1970) will have different dynamics, producing different effects upon the data, from culture to culture (Lange, 1975a).

The Emergent Model

The dominant model of mass media influence in development is Lerner's Model of Modernization, which can be represented symbolically as:

Urbanization → Literacy → Media Exposure → Income & Voting

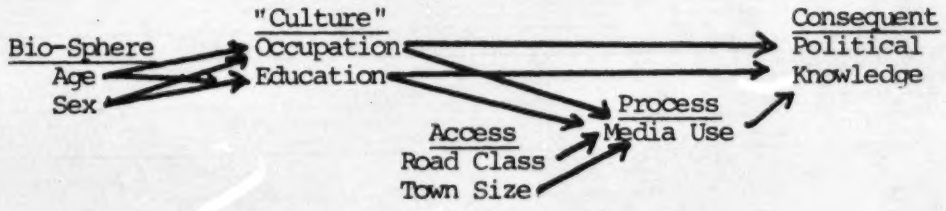
This has been considerably elaborated and tested using multi-variate analysis to produce the following framework (Rogers & Svenning, 1969:102):



This model is consistent with Lerner's, in that it emphasizes the linear process. An increase in social status, for example, leads to an increase in media exposure which in turn leads to an increase in political knowledge. Thus any affect of social status on political knowledge would be attributed to the effect of social status on mass media exposure. In effect, the model posits that one's "culture" is a highly complex social structure which dictates access to information sources, which in turn compel modernization. For reasons to be discussed more fully later, there is reason to question this linearity and the consequent implication that variables such as social status are mere inputs into mass media exposure for the purpose of predicting political knowledge.

The organization of the model seems to imply an equivalence of terms under the antecedents and consequents columns, without depicting their inter-relation. While Rogers and Svenning have examined these inter-relationships extensively, there has been little attempt to construct a model which would depict the flow of causal process.

The model used in the present study has been developed with two main goals in mind: (1) We have sought a more parsimonious model which uses variables that are less subject to bias, more easily operationalized, less expensive to assess, and more suitable to cross cultural comparison. (2) We have sought a model which reflects causal process and takes the inter-relationship between variables into account!



Five of the hypotheses which can be derived from the model are: (1) increase in media use is related to increase in political knowledge; (2) culture (i.e. clustering on social continua) as represented by education and occupation is directly related to media usage; (3) education and occupation are related to political knowledge above and beyond their relationship to media use; (4) the communications potential of the environment, as measured by the size of town and class of road, operate as antecedents to media use or to educational and occupational opportunity and thus have no independent relation to political knowledge; and (5) the biological character of the individual, as represented by age and sex, is related to political knowledge and media use via its relation to education and occupation.

Each of the variables employed yield at least ordinal scales, which is consistent with our position that the differences between "peasant" and "modern" cultures are continua which exist throughout the nation.

Method

Sample

During August of 1973, the Ghana Government Information Services supported a survey attempting to discern, among other things, the mass media's impact on the political information level of the nation (Lange, 1975b). The questionnaire was administered to 4863 Ghanaians, selected by quota sample using the 1970 census as a base of approximation for political region, town size, age, sex and education.

Variables

Political Knowledge: Following earlier studies (e.g.,Deutschman, 1963; Frey, 1966; Rogers & Svenning, 1969), we used a series of questions about political affairs which were then current in the mass media, the government information agency's portfolios and in public discussion. Respondents' scores are the number of correct answers to:

What is the Low-Cost Housing Scheme? (self-help development project)
What is the Dwahenya Irrigation Project? (agricultural development)
What is the Charter of Redemption? (government platform policy)
What is the Organization of African Unity? (political organization)
Who is General Gowon? (then-president of Nigeria, OAU)

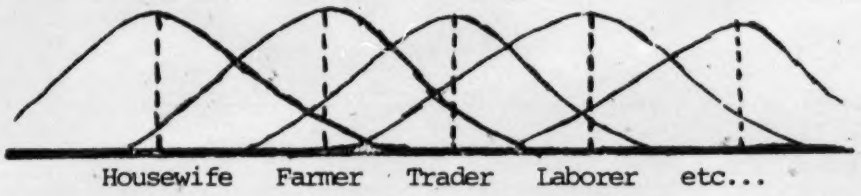
Occupation: The occupation of an individual will determine both the number of contacts (or information sources) available and the utility of political knowledge. Rather than conceiving of occupation as something one does for gainful employment, we believe that one's occupation prescribes a cluster of attitudes, values, and behaviors for theindividual occupying the role. From the view of information diffusion, each occupation places differential demands upon the individual in terms of the number of contacts it has with the social environment and the amount of information it is expected to have concerning the life space around it.

Rush (1972), echoing Wilensky (1961), elucidated this process by the contention that occupational experiences are "prime motivators and opportunities for extension into a broader social participation." Further, this social participation, Rush contends, provides a "means for social mobility, for adaptation and adjustment, for personal security, for fellowship, for explanation of and information about the perceived world."

For example, farmers tend to have social spheres which are relatively fixed, homogenous and invariant in comparison to a trader. We would expect

that the farmer's need for political knowledge would be less than the range of utility for a trader who is more geographically and socially mobile. (With this paradigm, an index of effective job functioning would be the difference between the knowledge demands of the role and the actual knowledge level of the individual.)

We selected eight levels of occupation which differentiate along the dimensions of information utility and number of contacts. Each higher level is presumed to have all of the demands and opportunities of the previous levels, plus the additions prescribed by its expanded roles. This is not to say that lower levels do not have the contacts or demands of the higher levels, but that they have them in a considerably smaller degree. One way to think of this continum is as a series of Gaussian (normal) distributions:



Occupation	Contacts	Utility of Political Knowledge
Housewife	relatives, neighbors	low, non-job related
Farmer	farmer colleagues, local politics	development concerns
Trader	clients, suppliers	economic concerns
Laborer	management, coworkers	labor issues
Student	books, other students	peer competition
Cleric/Tech.	professional community	political power (beyond local)
Teacher	(contacts & utility do not vary in kind, but increase in	
Manager	number and intensity vis-vis previous levels)	

Education: While much of education's impact on mass media use and political knowledge will be mediated by occupation, we suspect it will contribute significantly above and beyond the mediated relationship. Specifically, we posit a "thirst for knowledge," sometimes called deutero-learning or learning-to-learn (Scribner & Cole, 1973), which motivates individuals to seek information independent of its occupational utility. Our assumption is also based upon the development of a cognitive foundation that can accomodate new information. Without an adequate base of understanding, an individual tends to exhibit selective exposure and selective retention, dismissing information not readily accomodated into their pre-existing perception of the world as irrelevant. Specifically, for our study, the respondent would need a concept of "Africa" to be able to integrate information about the OAU; a concept of "the National Redemption Council" (government) to pay any attention to the Charter of Redemption; and a concept of "irrigation" to understand the Dwahenya Irrigation Project. Each of these underlying principles are, in turn, based on further underlying principles which those who have had formal education are much more likely to have been exposed to and to find useful than those who attended less school.

Education was assessed by self-report, with categories of none, primary, middle, some secondary, commercial, all secondary, post-secondary, varsity.

Media Use: Media exposure has consistently shown positive correlation with political knowledge (Rogers & Svenning, 1969), which seems logical since the mass media carry a preponderance of political information, especially in developing nations (e.g.,Barghouti, 1974). Our model suggests that given levels of occupation and education should produce motivation

for acquiring information regardless of source, due to utility demands and the "thirst for knowledge." Thus we included inter-personal media (government agents, local authorities, conversations with acquaintances) as well as mass media (radio, TV, newspapers, and magazines). We have maintained each medium as a separate variable, in order to establish a heirarchy of media effectiveness in information diffusion and to determine whether it is worthwhile to add a particular medium to a communications campaign.

The media use index is self-report data. Respondents were asked where they had heard of an item, and were allowed to mention up to four sources for each topic. Thus, for example, if a respondent reported hearing of all five items over the radio, a radio score of 5 was assigned. If the same respondent reported hearing of three of the topics on television, the TV score was 3. By allowing up to four self-generated choices, it was hoped that the pressures to conform to a media "type" would be less than if the respondent were given forced-choice lists.

Access: The size of town and class of road determines, in most developing nations, whether there are newspapers available, whether wired radio service is provided, and whether local merchants can stock batteries for transistor radios. The larger the town and the better the road, the more likely the possibility of contact with outsiders and the more easy the trips to other locations. Naturally the class of road and size of town are highly correlated. (There are few towns of 25,000 on footpaths and few villages of less than 200 on major highways.) However the interaction between the two measures of environmental communications potential may be interesting. Using the "sub-culture of peasantry" approach, there

may be some reason to expect that these variables will affect political knowledge beyond the regulation of access to media. If our model is correct, the effect of these access variables will disappear when media exposure is held constant.

Road class includes paths and tracks, roads seasonally impassable, unpaved all-weather roads, paved roads, and highways. Town size is a 9-point scale from less than 200 to over 50,000.

Age and Sex: Others have found good zero-order correlations between age and sex and political knowledge (Rogers & Svenning, 1969). It might be argued that women and older people are more conservative and less interested in political affairs, but since age and sex have strong negative correlations with education and occupation we suspect that these effects will disappear when job and schooling are controlled.

Statistical Procedure

The study uses partial and multiple correlational analysis. Partial correlation is a measure of association which mathematically removes the effect of other variables from the relationship between a pair of given variables. They are often used to determine whether a variable intervenes, or mediates, the relationship. In multiple correlation, two or more independent variables are used to explain or predict the variance of a dependent variable. It should be noted that, in both procedures, the square of the correlation coefficient represents the percentage of variance in the dependent variable that can be accounted for by the dependent variable(s).

X_1 :	Poli Knowledge	1.00												
X_2 :	Conversations	.13	1.00											
X_3 :	Radio	.72	.07	1.00										
X_4 :	Newspapers	.69	.08	.69	1.00									
X_5 :	TV	.32	.05	.30	.36	1.00								
X_6 :	Magazines	.28	.16	.27	.33	.22	1.00							
X_7 :	Local Author	.13	.18	.08	.10	.02	.02	1.00						
X_8 :	Govt Agent	.32	.19	.30	.27	.10	.13	.46	1.00					
X_9 :	Town Size	.24	.03	.23	.28	.26	.08	-.08	-.05	1.00				
X_{10}:	Access to Road	.24	.03	.23	.28	.23	.07	-.01	-.04	.75	1.00			
X_{11}:	Education	.39	.09	.37	.45	.23	.20	.10	.16	.19	.14	1.00		
X_{12}:	Occupation	.54	.03	.52	.59	.30	.21	.07	.13	.33	.29	.53	1.00	
X_{13}:	Sex	.18	.06	.18	.17	.02	.04	.04	.07	-.06	-.05	.10	.23	1.00
X_{14}:	Age	-.16	-.01	-.15	-.20	-.06	-.05	-.01	-.02	-.01	-.03	-.23	-.22	.11	1.00
		X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}

Table 1. Zero-Order Correlations (r = .10 at p = .001)

In testing the significance of relationships, we have chosen the p.=.001 level of confidence. This conservative level was chosen in order to compensate for the inherent weakness of self-report data relying on recall.

Results

Insert Table 1 about here

The zero order correlations among the variables are presented in Table 1. This set of zero correlations aid us in two ways: (1) they shed evidence regarding the direct paths as predicted by our model, and (2) they are involved in the computation of the partial correlations which tease out spurious relations between variables (e.g.,whether an intervening variable accounts for the variance).

Hypothesis 1: Mass Media Usage is related to Political Knowledge. Table 1 shows that all seven of the media are significantly correlated with political knowledge: conversations (r= .13), radio (r= .72), newspapers (r= .69), television (r= .32), magazines (r= .28), local authority (r= .13), and government agent (r= .32). The question now is whether some of the zero order correlations are spurious, in that knowing the degree of one medium's use does not add to our predictability of political knowledge when we have already ascertained data regarding the use of other media. Table 2 presents the partial correlation of each medium controlling for the other media. Although conversations and information from government agents approaches significance (r= .09, p/ .005), the only two media that remained significant were radio (r= .45, p/ .001) and newspaper (r= .34,

	zero-order	controling other media
Radio	.72	.45
Newspapers	.69	.34
Television	.32	.07
Magazines	.28	.03
Government Agent	.32	.09
Local Authority	.13	.02
Conversations	.13	.09

Table 2. Zero-Order and Partial Correlations for Media Use and Political Knowledge ($r = .10$ at $p = .001$)

p/ .001). Lastly, the multiple correlation between all media use and political knowledge is .77, suggesting that we can account for 60% (R^2) of the variance in political knowledge with the media variables.

Insert Table 2 about here

Hypothesis 2: One's culture, as represented by one's education and occupational role, is related to media usage. Table 1 shows that education is significantly correlated with all but one of the media: radio (r= .37, p/ .001), newspaper (r= .45, p/ .001), television (r= .23, p/ .001), magazine (r= .20, p/ .001), local authority (r= .10, p/ .001), and government agent (r= .16, p/ .001). Occupation is significantly correlated with all but two of the media use variables: radio (r= .52, p/ .001), newspaper (r= .59, p/ .001, television (r= .30, p/ .001), magazine (r= .21, p/ .001), and government agent (r= .13, p/ .001). Neither education nor occupation is significantly related to conversations (r= .09 and r= .03, respectively). To discern whether either education or occupation is related to media use beyond their relationship with each other, Table 3 presents the partial correlations between education and media use, controlling for occupation, and between occupation and media use, controlling for education.

Insert Table 3 about here

As indicated in Table 3, controlling for occupation had its greatest impact on the correlations between education and the mass media (radio, newspaper, television, and magazines). Education, controlling for occupation, was still significantly related to radio use (r= .13), newspaper

	education, zero-order	education, controling occupation	occupation zero-order	occupation, controling education	multiple R
Radio	.37	.13	.52	.41	.53
Newspapers	.45	.21	.59	.46	.61
Television	.23	.09	.30	.21	.31
Magazines	.20	.10	.21	.13	.23
Government Agent	.16	.11	.13	.06	.17
Local Authority	.10	.07	.07	.02	.10
Conversations	.09	.09	.03	-.02	.09

Table 3. Zero-Order, Partial and Multiple Correlations between Media and Occupation/Education ($r = .10$ at $p = .001$)

use (r= .21), magazine use (r= .10), and use of information from the government agents (r= .11). In comparison to controlling occupation in the relation between education and media use, controlling for education has less of an impact on the relations between occupation and media use. Occupation, controlling for education, was still highly related to radio use (r= .41), newspaper use (r= .46), television use (r= .21), and magazine use (r= .13); only the relation with the government agent became nonsignificant (r= .06). The multiple correlations presented in Table 3 represent the degree of accuracy in predicting media use given the occupation and education of the individual. Our best predictions would be made regarding radio use (R^2= .28) and newspaper use (R^2= .37). Poorer predictions would result regarding conversations (R^2= .01) and local authority (R^2= .01).

Hypothesis 3: Occupation and education will remain significantly related to political knowledge even after partialling out their relation with media use. Partialling out all of the media use variables, occupation was still significantly related to political knowledge (r= .17, p< .001). On the other hand, partialling out all of the media variables causes the correlation between education and political knowledge to become nonsignificant, although there does appear to be a trend (r= .07, p< .02). It should be noted that the multiple correlation between political knowledge and the media variables plus occupation and education rises to .78, suggesting that we can account for 61% of the variance in political knowledge given information regarding media use and one's education and occupation.

Hypothesis 4: Town size and road class will be related to political knowledge only in the sense that they provide access to media use. As indicated in Table 1, both of the zero order correlations between town size and road class, and political knowledge are significant (r= .24, p/ .001). Although when partialling out media use, both of these correlations become nonsignificant (r= .05, p= .08).

Insert Table 4 about here

Hypothesis 5: Sex and age will be related to political knowledge and media exposure only in the sense that they are related to occupation and education. Table 4 presents the zero order correlations between sex and age, and media use and political knowledge; also included are the partial correlations, controlling for occupation and education. Although there were three significant zero order correlations for sex and radio (r= .18), newspaper (r= .17), and political knowledge (r= .18), Table 4 indicates that all of these become nonsignificant when partialling out education and occupation (.07, .05, and .08, respectively). Similarly, three significant zero order relations were found for age and radio (r= -.15), newspaper (r= -.20), and political knowledge (r= -.61), Table 4 indicates that these also vanish when partialling out education and occupation (-.02, -.06, and -.04, respectively).

Discussion

With the exception of a disconfirmation of the contended partial correlation between education and political knowledge, controlling for mass media exposure, the results conform to the predictions derived from the model. Furthermore, most of the results are consistent with the theory

	sex, zero-order	sex, con for ed & occ	age, zero-order	age, controling for ed and occ
Radios	.18	.07	-.15	-.02
Newspapers	.17	.05	-.20	-.06
Television	.02	n.s.	-.06	n.s.
Magazine	.04	n.s.	-.05	n.s.
Local Authority	.03	n.s.	-.01	n.s.
Government Agent	.07	n.s.	-.02	n.s.
Conversations	.06	n.s.	-.01	n.s.
Political Know.	.18	.08	-.16	-.04

Table 4. Zero-Order and Partial Correlations between Sex/Age and Media Use and Political Knowledge ($r = .10$ at $p = .001$). Note: sex coded 1 for male and 0 for female.

and research prevalent in the field. In fact, the one major result which deviated from our model, i.e. the lack of a relation between education and political knowledge when controlling for exposure to mass media, would have been predicted by the Lerner (1958) model: more education leads to greater media exposure. It would seem that our contended "thirst for knowledge" is satiated through mass media, at least in regards to political knowledge. In a sense, education provides "cognitive access" to the information disseminated by the mass media.

As predicted, increases in the use of an information medium (whether inter-personal or mass) was positively related to increases in political knowledge. In attempting to develop a hierarchy of the efficacy of media in disseminating political knowledge, we found that, at least in Ghana, the more effective media were radio and newspapers, while the less effective media were magazines and local authorities. Furthermore, when partialling out all other media, an interesting relationship develops between the media: the highest partial correlations with political knowledge were found for radio and paper, while the next highest, although only approaching significance ($p \leq .005$), were conversations and government agents. One speculative interpretation might be that individuals utilize newspapers and radios for primary awareness and then, depending upon their motivation, validate/elaborate that awareness via inter-personal modes. This possibility has some empirical backing in the "two-step flow" literature (e.g., Katz, 1957). Lastly, although differences between the media were found, the fact that mass media use (radio, paper, TV, and magazines) were intercorrelated provides some support for Lerner's (1963:341) notion of

the "centripetal effect" -- exposure to one medium is positively related to exposure to other media.

According to the model, one's education is positively related to media use. With the exception of interpersonal media (conversations and local authority) this proposition was supported by the results. Although Rogers and Svenning (1969:105) measured mass media from the centripetal alogrithm, their correlation between education and mass media exposure (r= .51) closely approximates our range of correlations. Also, their finding that literacy is most highly related to newspaper use is, in part, replicated by our finding that education is most highly related to newspaper use.

The model also predicts that one's occupational role is positively related to both media use and political knowledge. The correlation between occupation and political knowledge, after the effects of mass media exposure have been removed, suggests that one's occupational role provides motivation to acquire and retain knowledge above and beyond those with equal access potential in less information-demanding jobs. McGuire (1969), in developing a model of persuasion, suggested that there were five steps to attitude change: attention, comprehension, yielding, retention, and action. Education and occupational role, via their relations to media use, would most likely be operative in the first two steps, while occupational role, apart from its relation with media use, would probably be operative in the latter stages of McGuire's model -- yielding, retention, and action. Rogers and Shoemaker (1971) suggest a similar explanation of innovation: we propose that access is most important in the awareness phase, education and occupation in the interest phase, and occupation alone in the evaluation and trail phase.

Physical access variables (town size and road class) contribute to media use but have no effect upon political knowledge above and beyond their influence on mass media exposure. Similarly, it was found that sex and age are antecedent variables to occupation and education, and have no affect on political knowledge independent of their relation with occupation and education.

Using education and occupation alone, we were able to predict political knowledge and media use as well or better than previous studies (e.g., Rogers & Svenning, 1969; McNelly & Molina, 1972, Stephens, 1972) which used a complex variety of antecedent variables, including slippery concepts that are subject to western bias, such as cosmopoliteness, empathy, dogmatism, and literacy. Besides providing a more parsimonious perspective, the model is composed of variables for which data can be easily and economically obtained. In this sense, the proposed model has a strong pragmatic character.

Operational Equivalence

The number of years of schooling and the occupational position of a respondent are comparable cross-culturally. While there may be some difference in the quality of schooling from place to place, just as there may be differences in the ordering of curricula, this will not affect the predictive ability of the coarse levels of education we have chosen. Most school systems around the world divide education into a primary, middle, secondary, and higher education format. It is also true of most cultures that the drop-out rate, and thus the distinction between some secondary schooling and secondary school completion should

hold up, operationally, across cultures. (Here, the U.S. is an exception, since our highest in-process drop-out rate is in higher education).

The occupational distinction between farmers, traders, laborers (unskilled workers), students, skilled labor, teachers, and managers are also common in developing nations. There may be some difficulty with the classification "housewife." In most developing nations, a housewife also has duties in farming and often even in trading. However, the distinction between females whose primary role is defined by the family activities versus those whose primary roles are defined by modes of earning a living seems fairly universal.

Conceptual Equivalence

The concept of formal education is fairly international, and poses little difficulty of conceptual equivalence. Occupational categories face greater difficulties. There are professions which are difficult to fit into our category structure, such as the holy man in India who makes his living by begging. This kind of individual has an extremely high need for varied contacts, but not necessarily a high utility for political knowledge. Forcing him into the category of "student" would be a bit of logical gymnastics, and the other categories are clearly inappropriate.

Never-the-less, we feel that the concept of occupation is likely to prove more comparable across cultures than "status," for example, since economic activities relate more closely to an objective reality than to a culturally determined psychological perception.

Operationalization

The collection of self-report data, while facing many theoretical problems, is more economical than socio-metric scaling. Both education and occupation are clearly anchored in social reality, and we feel that they are likely to be highly reliable. While there may be a tendency for respondents to desire to inflate both the educational and occupational attainments, his knowledge of the ease of experimenter verification is likely to hold such exageration to a minimum (Erickson, McDonald & Gunderson, 1971).

One occupational level is likely to cause problems: all cultures have a category of "unemployed" who vary widely in education, contacts, and need for political knowledge depending upon the type of occupation they seek (or style themselves as seeking). This information, solicited by self-report questions, is likely to be highly unreliable.

Theoretical Complexity

The relationship of education to political knowledgability through a "thirst for knowledge" was not (fully?) substantiated. This may have been an egotistical dream of the experimenters who are products of, and participants in, higher education. The suggestion that education is essential for information gathering, since it is necessary to have a base of old knowledge upon which to build new knowledge, is the foundation of formal educational systems. Courses and curricula are thought to have a necessarily sequential nature. Unfortunately, this belief could not be experimentally confirmed as it pertains to the acquisition of

political knowledge. The relation of education to media use, through habit (the reading habit, the gathering habit) is simple and straightforward. It could even be reduced to a Skinnerian model of operant conditioning.

The rise in the utility of political knowledge, and the number of contacts from whom that knowledge can be gained and on whom it can be used, with a rise in occupational level seems to have strong fact validity. Its main problem is that it is untested by our survey. We feel a strong need for research to test the assumption that contacts increase and that information utility increases simply by virtue of occupational roles.

Western Bias

Both formal education and occupational specialization seem to be concepts in world-wide use for so long that their origin is obscure. The variables, and their levels, seem to contain fewer evaluative components from a western viewpoint. Bias may enter in the assigning of a given respondent to given categories within the occupation scale, however, and the exclusion of many functions which do not fit these categories clearly proceeds from a western, materialistic world view. Our only comfort is that the number of respondents whose occupations do not fit into our categories is likely to be small, even on a national scale.

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